Research
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Oregon's Road User Fee Pilot Program

Motor fuels taxes have long been the mainstay of highway funding in the United States and are the primary method for charging motorists for use of the roads. In 1919, Oregon became the first state to enact a gas tax, and within 10 years every state had followed suit. Alaska and Hawaii instituted motor fuels taxes upon achieving statehood in 1959. Federal gas taxes were first levied in 1932. The Federal Highway Administration, Office of Policy Information, Highway Statistics, reports that in 2004 Americans consumed more than 170 billion gallons of motor fuels and that federal, state, and local entities collected more than $106 billion in total motor fuels tax revenues.

In an effort to help the United States become less energy dependent and to improve the air quality in cities, the auto industry and the federal government are working cooperatively to design a new generation of vehicles that are either hybrid—a combination of electric and conventional internal combustion power—or are powered by hydrogen fuel cells. Several auto manufacturers are also experimenting with internal combustion engines powered by hydrogen.

> "As well as the gas tax has served the road needs of Oregonians in the past, it will soon become a declining revenue source. The Road User Fee Task Force is charged with the duty of designing a new revenue collection system for road funding to ultimately replace the gas tax. Oregon will be well served in finding a solution to this concern before it becomes an emergency."
>
> —*Senator Bruce Starr*
> Road User Fee Task Force Chair

It will take time before these new propulsion systems become prevalent enough to severely reduce motor fuels tax revenues. However, in anticipation that motor fuels taxes may not meet the needs for highway costs in the future, states are looking for other ways to replace these methods of finance.

According to the Victoria Transport Policy Institute, a Canada-based independent research organization, federal and state fuel taxes have not been raised to account for inflation and increased vehicle fuel efficiency, resulting in declining revenue per vehicle-mile. Conversely, population growth and more vehicles per household are contributing to more road use, and costs for new transportation projects and maintenance costs are increasing.

The Oregon Approach

Background

In 2001, the 71st Oregon Legislative Assembly authorized the creation of the Road User Fee Task Force (RUFTF), administered by the Oregon Department of Transportation (ODOT), to examine various revenue-raising alternatives for replacing Oregon's gas tax as the primary source of revenues for building, maintaining, and repairing Oregon's roads. The six-year project is being funded with a $2.1 million grant from the Federal Highway Administration and $771,000 in state funds.

RUFTF agreed that a replacement to the gas tax should be a user-based fee because it is a fair, simple, and affordable way to generate revenue for road repair, maintenance, and construction, as the fee is based on actual miles traveled in Oregon. After 16 months of meetings, research, and discussions, RUFTF focused on a mileage-based or vehicle miles traveled (VMT) charge. A pilot program will begin in the spring of 2006.

How It Works

RUFTF recommended that any new road funding mechanism be based on a "user pays" philosophy. The recommendations stated that the mileage charge should generate sufficient revenue, be transparent and acceptable to vehicle owners, be enforceable, and be capable of replacing the fuels tax on gasoline as the primary revenue stream supporting the Oregon road system. RUFTF determined that the new revenue sources would include mileage fees and congestion pricing, value pricing, or peak period pricing.

Mileage pricing is defined as a distance-traveled charge imposed according to the extent to which a vehicle owner uses the road system. RUFTF considered this per-mile charge to be the principal general revenue source for a new system that would ultimately replace the fuels tax.

Congestion pricing (value pricing or peak pricing) road charges are based on a vehicle's use of specific roadways that have a higher use during more congested time periods (peak commute times) and lower use during off-peak periods for identified travel corridors. Assessment of the fees can be accomplished either through an independent electronic system using roadside readers or as a rate adjustment to a mileage fee for the time of day of travel in specific geographic areas where there is congestion, known as "area pricing."

In designing the fee based on VMTs, RUFTF determined that the following factors must be considered:

- Accuracy—the technology used should enable accurate fee calculation;
- Reliability, security, and technological feasibility—the technology used must be reliable, secure and technologically feasible;
- Minimal evasion potential—the technology and administration mechanisms should allow minimal opportunities for evasion or fraud;
- Ability to exclude mileage traveled outside of Oregon—a fee should not apply to mileage traveled by Oregon vehicle owners outside the state's boundaries;
- Minimal burden on the private sector—the required capital expenditures and the costs of collection should minimally burden the private sector;
- Retrofitting affordability—any retrofitting of new technology into older vehicles should be affordable;
- Seamless transition—transition should be essentially seamless with no more than an incidental loss of gas tax revenue; and
- Privacy—Oregonians must be assured that the technology used cannot violate the level of privacy expected by the general public.

Data Collection Technology

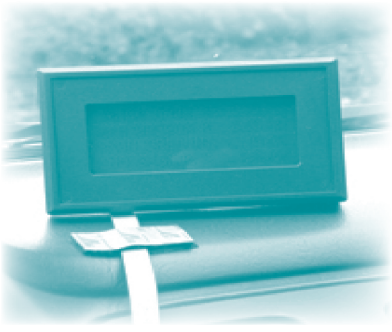
In determining the method by which data would be collected, ODOT's consultants explored two possible electronic data collection, storage, and transmission technologies. One was based on the vehicle's odometer. The second method was based on a global positioning system (GPS) receiver.

Odometer-based technology obtains information from the vehicle's speed sensor to measure the miles traveled. Through the use of wireless structures located at the state borders, the collection of miles driven in Oregon is turned off and on as a vehicle leaves and enters the state. Mileage data is stored within the vehicle's computer and recorded wirelessly by radio frequency readers.

GPS receiver-based technology uses a GPS receiver that determines its own position from a signal received from at least three GPS satellites, resulting in a geographic position. The data can be used to measure the miles traveled. In the application of this technology, no signal is sent by the GPS receiver to the satellite system nor received by the satellite system. Mileage-traveled data is stored within the vehicle's computer and then read wirelessly by radio frequency readers.

Ultimately, ODOT decided on the use of a hybrid system. The hybrid odometer/GPS technology uses the odometer's speed sensor to measure miles traveled and a GPS receiver to indicate in which zone the vehicle is traveling. ODOT determined that the hybrid odometer/GPS technology combines the odometer's accuracy at measuring miles traveled with the GPS receiver's precision and flexibility to differentiate zones.

The mileage fee would be collected from motorists operating vehicles equipped with manufacturer-installed instruments that meet prescribed specifications. Motorists with older vehicles would continue to pay the fuels tax at the pump, as would drivers from other states. In order to purchase fuel, all motorists (except heavy



trucks) refueling within Oregon's borders, regardless of the type of fuel used, would pay either fuels tax or a mileage fee. Tampering with the on-vehicle mileage fee instrumentation in gasoline-powered vehicles would automatically trigger reversion to a fuels tax system at the next refueling, precluding evasion.

Only travel within Oregon will be subject to the mileage fee. Out-of-state miles driven by Oregonians will not be charged under the pay-per-mile system, as determined by the hybrid odometer/GPS technology.

Collection

RUFTF has not yet determined where payment of the mileage fee would occur. Several options are being explored, including collection of the fee by an independent center or the Department of Motor Vehicles (DMV) or collection at service stations. If the mileage fee was paid at an independent collection center or at the DMV, the vehicle owner would receive a periodic billing for payment, perhaps once a month. If the mileage fee was paid at a service station, the vehicle driver would pay the fee as part of refueling, similar to the way the motor fuels tax is paid now. For the purposes of the pilot program, payment of the mileage fee is occurring at participating service stations.

Major Policy Considerations

Rates

Ultimately, should full implementation of a VMT fee take place, VMT rates will be set by the legislature. Discussions of both flat and graduated rates are ongoing.

RUFTF determined that, in order to provide revenue that is equal, on a per-mile basis, to the revenue produced by the current 24 cent per gallon fuels tax rate on gasoline, the minimum mileage fee rate will have to be 1.2 cents per mile. RUFTF calculated the rate by dividing the 24 cent gas tax rate by the current average fuel efficiency of passenger vehicles, based on 20 miles per gallon (.24/20=0.12).

RUFTF feels that all vehicles require the same level of service from the road system regarding space, signaling, bridges, braking capacity, proper pavement condition, signage, entrances, exits, and safety features. RUFTF's philosophical view is that every passenger vehicle burdens the road system to the same degree and should bear the same burden for maintenance and improvement to the road system, and RUFTF prefers a flat rate for reasons of simplicity and consistency.

In the pilot program, three different rates are being applied. A control group will continue to pay the motor fuels tax, with no VMT fees. A second group, a non-rush hour group, will pay a 1.2 cent per VMT fee and will not be subject to a motor fuels tax. A congestion pricing group will be subject to a 10 cent per VMT fee in certain zones and a .43 cent per VMT fee when the vehicle is not in a congestive zone and will not be subject to the motor fuels tax.

Environment and Energy

If a VMT charge is imposed on a flat fee basis, the new system will be advantageous to some vehicles and disadvantageous to others as compared to the current gasoline fuel tax. Motorists driving a vehicle with low fuel economy will pay less tax per mile driven than under the current motor fuels tax system, while those motorists driving a vehicle with higher fuel economy will pay more tax per mile driven under the flat mileage fee than the current motor fuels tax system. Opposition has also arisen over the flat mileage fee because some believe that environmental and energy policy concerns are as important as road capacity or user responsibility.

Privacy

RUFTF asserts that the on-vehicle device that records mileage never stores a vehicle's travel history and that no vehicle location data are sent back to a satellite or anywhere else. The on-vehicle device's GPS receiver generates location data only for the purpose of identifying zones where mileage accumulates. Essentially, the sole purpose of the GPS receiver is to answer, in a yes/no manner, whether the vehicle is driving in a particular zone (e.g., the state of Oregon) for purposes of assigning miles driven to fee or non-fee categories. Data collection and fee payment would occur at fueling stations. VMT data and vehicle identification (to permit auditing and error detection) would be read from vehicles by readers at retail fueling stations via short-range radio frequency communications. The only data read by the radio frequency reader would be the vehicle and device identification and the total number of miles driven in the differentiated zone categories for purposes of applying the per-mile fee. There would be no transmission of travel location points, at any time, to anyone.

In a Heartland Institute article published April 1, 2005, privacy advocate David Sobel of the Electronic Privacy

Information Center, a public interest research center in Washington, D.C., contends that there is little reassurance that this is the case. Sobel stated that "once technology is in place, it's virtually impossible to resist finding ways to use it" and expressed his concern that law enforcement officials will want to use it. Sobel cautioned that whatever system is used, the individual should always be in control of his or her data, and he said that with a pay-at-the pump model, if the individual accepts the tax calculation as correct, he or she should have the option of purging the record from the system.

Variable Fees for Peak Period Pricing

RUFTF recommended that congestion pricing be part of a new road revenue system. Congestion pricing allows for collection of additional charges for motorists who drive on certain roadways during peak periods. The Oregon mileage fee concept could accommodate development of precise strategies for peak period pricing to take into account the particular characteristics of individual communities for a given locality. There are legal constraints surrounding the imposition of peak period pricing. The Oregon state constitution's uniformity in taxation clause will prevent the assessment of a peak pricing premium, because only motorists with the technological capability of tracking mileage in congestive zones could be charged. There is no method to track VMTs, or track mileage in congested areas, for motorists driving vehicles that require the continued use of motor fuels that are taxed under the current per-gallon system. Until all vehicles driven in Oregon are equipped with the necessary technology or another method is found to charge motorists driving non-equipped vehicles equal amounts as those driving equipped vehicles, peak period pricing cannot legally be implemented. The pilot program will test congestion pricing, but participation is voluntary.

Costs of Implementation

If the state of Oregon decides to move to a VMT system, ODOT estimates that it will take approximately 20 years to fully implement, with ODOT's concept having the necessary technology components installed during vehicle manufacturing. No retrofitting of existing vehicles will be required. While final collection decisions have not been made, ODOT has estimated that it will cost approximately $33 million to equip service stations as collection points, with annual operating costs of $1.6 million.

Conclusion

As car manufacturers, in conjunction with government, develop technologies designed to lessen America's dependency on gasoline, alternatives for replacing revenues generated by taxes on traditional motor fuels will need to be explored. Oregon's program is in its infancy, and many issues have yet to be resolved. The voluntary pilot program will begin recruiting in the spring of 2006, using 280 vehicles equipped with the new technology to track VMTs. The feasibility of this alternative method to replace the traditional motor fuels tax as the method of finance for highways will be watched by many.

—by Lisa Conley, SRC

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